

Recommendations for Improving Riparian Bird Habitat on Private Lands in Marin County¹

Developed by the *Marin Riparian Habitat Conservation Program*, updated December 2001

Top riparian bird species that breed in Marin and Sonoma:

Bank Swallow ²	Common Yellowthroat
Swainson's Thrush	Wilson's Warbler
Warbling Vireo	Black-headed Grosbeak
Yellow Warbler ³	Song Sparrow

Top riparian trees and shrubs (recommended for plantings):

Red & White Alder	<i>Ribes</i> spp. (e.g., gooseberry)
California Bay Laurel	Red Elderberry
Box Elder	California Blackberry
Arroyo ⁴ , Red & Yellow Willow	Sword & Lady Fern

I. Site Selection

Recommendation	Explanation
Prioritize restoration sites according to their proximity to existing high quality sites.	High quality sites serve as population sources (i.e., high reproductive success) during the colonization of new sites.
Protect and restore riparian areas with intact adjacent upland habitats.	Upland habitat is used by many riparian species for breeding, dispersal, foraging, and gathering nesting material.
Prioritize sites with an intact natural hydrology or the potential to restore the natural processes of the system.	Flooding, point bar formation, and soil deposition are natural disturbances that help diversify the vegetative structure of a site.

II. Site Preparation

Recommendation	Explanation
Remove all existing non-native and invasive plant species prior to any restoration work.	Invasive species reduce the structural diversity of habitats by eliminating competitors.
Retain some dead or older trees (with the exception of invasive species) to promote occupancy by cavity nesters.	Cavity nesting species are often absent from new restoration sites due to the lack of mature trees.

III. Planting and Restoration

Recommendation	Explanation
Restore and manage riparian forests to promote structural diversity and volume of the understory.	Structural diversity enables species with different habitat needs to inhabit the same area.
Restore the full width of the riparian corridor and/or floodplain whenever possible. Space fences at a sufficient width to allow the stream to naturally meander over time.	Species richness, population size, and possibly reproductive success increase with the width of the riparian.
Use native plants from local genetic stock.	Locally adapted plants have higher survival rates and are favored by native birds.
Plant a minimum of two or more species of native trees. Avoid using only willows, even if they are different types.	Bird diversity increases with tree species richness, tree height, and tree girth.
Include plantings of native shrubs and other understory species in restoration design.	Most birds nest and forage within five feet of the ground. A thick understory yields more potential nesting/foraging sites.
Plant native forb and sedge species.	Grasses are also used as a nesting and foraging substrate.
Plant a mix of species in a mosaic design. Shrub patches should be interspersed with trees to achieve a semi-open canopy, and same species should be clumped together.	A semi-open canopy increases structural diversity and bird nesting success. Clumped vegetation of the same species is something that birds key into as optimal habitat.

¹ Adapted from: RHJV (Riparian Habitat Joint Venture). 2000. Version 1.0. The riparian bird conservation plan: a strategy for reversing the decline of riparian associated birds in California. California Partners in Flight. <http://www.prbo.org/CPIF/Riparian/Riparian.html>

² While rarely found in both Marin and Sonoma, Bank Swallows are still possible local breeders.

³ Yellow Warblers have very few confirmed nest records in both counties. While unclear, their historical distribution may have been much higher, so their potential for future breeding may be significant.

⁴ Arroyo willow has a tendency to creep into the streambed. While it might be objectionable to some, this process can increase the structural diversity of a site.

Promote the restoration of upland habitats adjacent to riparian areas, especially native oak-woodland.	Uplands provide key foraging/nesting habitat for many riparian species. Without it, some riparian species may be absent.
Connect patches of restored riparian habitat with strips of dense, continuous vegetation that are at least 3 to 10 meters wide.	These can serve as dispersal corridors and foraging habitat for riparian species, especially ones that fly only short distances.
Plant soft edges (gradual boundaries between different types of vegetation) along the margins of restored sites.	Soft edges (e.g., hedgerows, field margins) may have lower nest predation rates than areas with abrupt changes in vegetation.
Limit restoration activities to the non-breeding season (August to February).	To avoid destruction or disturbance of nests, fledglings, and nesting birds.

IV. Maintenance

Recommendation	Explanation
Discourage grazing and other disturbance events (mowing, disking, etc.) in all riparian areas during the bird-breeding season (March–July). If grazing is absolutely necessary, limit it to short periods of time between mid-August and October.	The breeding season is critical to maintaining the size of bird populations. Because many species nest on or near the ground, grazing directly damages bird nests and eliminates valuable nesting and foraging habitat.
If grazing is required <i>during the breeding season</i> , encourage landowners to begin grazing in March to prevent establishment of nests.	Early grazing prevents the establishment of nests by removing the substrate before nest construction begins.
Ensure that exclusion fences are properly maintained throughout the duration of the contract. If possible, seek additional funding to achieve this goal.	Fences are often damaged by cattle that break into the riparian zone. This is particularly detrimental between March and July, when many birds are nesting on or near the ground.

V. Information for Public Outreach (*for newsletters, publications, and direct communication*)

Recommendation	Explanation
<u>Protect nesting birds and the understory during the breeding season</u> (March-July).	Most people are unaware that birds actually nest on or near the ground, and that a thick understory is crucial to their ability to nest and rear young successfully.
<u>Keep cattle out of the riparian zone</u> , especially during the spring.	Cattle remove the understory and trample nests. This is especially detrimental when ground nests are present (Mar-Jul).
<u>Control cats</u> and other potential predators: <ul style="list-style-type: none"> • <i>Keep domestic cats indoors!</i> • Trap and neuter feral cats • Secure garbage & compost to reduce scavenging by wildlife 	Domestic and feral cats are estimated to kill millions of birds every year, contributing significantly to their declines. Wildlife such as raccoons and skunks also serve as potential bird predators. Note that even well-fed cats can be avid hunters!
<u>Feed birds responsibly</u> : <ul style="list-style-type: none"> • Don't feed <i>jays, crows, magpies, cowbirds, and ravens</i> • Place feeders in cat free zones • Clean feeders frequently • Place feeders away from shrubs and bushes 	Improper feeding can boost predator populations and help spread diseases. Special feeders designed for small birds can be purchased from selected suppliers.
<u>Prevent birds from flying into house windows</u> . Always use curtains or paste a cutout paper shape directly on the glass.	Placing a solid object directly behind windows prevents birds from flying into the glass and injuring themselves.
<u>Create bird habitat for pest control</u> .	Many birds are avid insect eaters and can help control agricultural pests. Owls and hawks may hunt pest rodents.

VI. Monitoring

Recommendation	Explanation
Conduct intensive long-term monitoring of birds and vegetation at selected sites.	Monitoring should continue for at least five years in order to properly assess demographic information and use the information to guide future practices.
Consider monitoring avian productivity at selected sites to assess true habitat value.	Species presence or absence may not be a sufficient means of determining restoration success. Breeding productivity can yield more detailed information on habitat quality.
Use standardized monitoring protocols.	Useful for comparing results across space and time.